Project B-226

FLUORESCENT LAMP BALLASTS:
A MANUFACTURING OPPORTUNITY IN ATLANTA

Prepared for

FORWARD ATLANTA
The Atlanta Chamber of Commerce

by

L. J. Heierman

Industrial Development Branch
Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY
April 1962

Table of Contents

Maps

Foreword

Atlanta's attractiveness as a location for various types of manufacturing plants is in many cases strongly based on its present importance as a distribution center. This is certainly the case with fluorescent lamp ballasts, as shown by the analysis presented in this report.

As noted in the foreword to the first report, each analysis concentrates on an industry which has been determined to be a good one for Atlanta, as well as focusing on specifics which demonstrate why Atlanta should be an attractive location for companies manufacturing the particular product or products analyzed.

This is only the third of the series of major reports being prepared as part of the FORWARD ATLANTA campaign -- the second to focus on the specific manufacturing potentials to be found in the Atlanta area. Others in the series will include a wide range of topics, from pharmaceuticals to computing and accounting machines.

Requests for additional information on this particular industrial potential or on other products of interest to manufacturers considering a location in the Southeast are invited. All such inquiries will be handled in strict confidence.

Kenneth C. Wagner, Head
Industrial Development Branch
GEORGIA INSTITUTE OF TECHNOLOGY

ACKNOWLEDGMENTS

The author wishes to express appreciation to the many people who contributed so generously to the preparation of this report. Electrical distributors and contractors, members of trade publications and associations, and members of the lighting industry offered valuable information and assistance in the compilation and evaluation of data. Special credit is due to Mr. Berlin C. Cooper, Associate Editor of McGraw Hill's "Electrical Construction and Maintenance"; Mr. C. L. Comer of Lithonia Lighting, Incorporated; Mr. L. A. Goehring of General Electric Company, Atlanta; and Mr. J. E. Sweatte of the Georgia Power Company, Atlanta, Georgia.

We are also grateful for the help of other members of the Industrial Development Branch. Mr. Carlos Abella provided technical assistance, Mr. J. R. Peterson reviewed and edited the manuscript, and Miss Mary McGlone prepared the report for publication.

In what is referred to as Atlanta's freight advantage area (see Map 1) there is a $15 million annual market for fluorescent lamp ballasts. There are $10 million worth sold in just the six states of Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee. In the Atlanta area alone sales amount to $6 million.

The market is expected to increase at an annual rate of at least 5 per cent and for the area where Atlanta has a freight advantage sales should reach $18 million by 1965.

In addition to the fluorescent lamp ballast market there is an extra $2 million worth of transformers sold for mercury vapor lamps.

The industry is currently concentrated in the Chicago and New York areas (see Map 3). The largest producer for the original equipment manufacturer market is located south of Chicago, in Danville, Illinois. Another major manufacturer -- whose production, however, is almost entirely captive to its own fixture operation -- is located at Vicksburg, Mississippi. At present no manufacturer regularly delivering to the original equipment manufacturer ballast market is located in the Southeast, but one of the majors expects to establish a plant at Mendenhall, Mississippi in the near future.

The ballast market in the Atlanta area represents 40 per cent of the total demand in the freight advantage area. In terms of units produced, the Atlanta area is the site of the nation's largest manufacturer of fluorescent fixtures. In addition, Atlanta is the major distribution center in the Southeast, and a large number of ballasts currently move through Atlanta warehouses to points in the Southeast.

Total potential freight savings for a manufacturer delivering to the southeastern market from a plant located in Atlanta as opposed to one in Danville or Chicago, Illinois are estimated as follows:

Freight Savings on Delivery	Delivery from Atlanta instead of: Danville, Ill.	Chicago, Ill.
To the $6 million Atlanta area market	$ 95,000	$110,000
To the $10 million 6-state market	130,000	150,000
To the $15 million southeastern market	155,000	190,000

An Atlanta manufacturer supplying only 10 per cent of the market would benefit by a sizeable savings in delivery costs.

There would be substantial savings on labor as well. Based on the most comparable operations reported in the census for the South and for Illinois, labor savings could be approximately 3.7 per cent of sales.

The first ballast manufacturer locating in Atlanta should be able to capture most of the Atlanta area market and substantially increase his sales throughout the rest of the Southeast as well.

Most of the materials that go into a ballast are available locally. Steel is available from nearby steel mills and warehouses, and Georgia manufacturers can provide copper wire and insulated leads. Ballast capacitors are made by Federal Pacific Electric Company in Sanford, North Carolina.

I. INTRODUCTION

This report is written to demonstrate to the established manufacturer of fluorescent lamp ballasts the advantages of setting up a branch operation in Atlanta, Georgia. The growing fluorescent market makes expansion of ballast facilities inevitable, and the manufacturer will benefit by locating within a center of heavy demand. By doing so, he will effect considerable savings in delivery costs and will be in a position to expand his market through improved customer service and shared economic advantages.

Ballasts are many and varied in design. Some manufacturers produce more than 100 different items. Basically, the ballast is a fairly simple piece of equipment consisting primarily of:

a metal housing,
an iron core,
multiple winding coils (copper wire with paper insulation), and
asphalt or plastic fill to eliminate hum.

But the ballast is steadily becoming a more complex product with the addition of built-in power factor correcting capacitors, radio interference filters, instant starters or starting circuitry, and, most recently, thermal protective devices. With the development of high frequency lighting, the ballast will become even more complex when it must be tied into frequency multiplying and power generating equipment. At least one major manufacturer is known to be working on a transistorized ballast. Once such a device becomes economically practicable, high frequency lighting can be expected to "boom."

II. THE MARKET FOR BALLASTS

The National Market

Total shipments of fluorescent lamp ballasts in the United States in 1961 were approximately $91 million. By far the greatest portion of shipments move to the original equipment manufacturer market. It is estimated that no more than 20 per cent of total sales are for replacements. While the replacement market is a steadily increasing outlet, sales to OEM fluctuate with the general economy and with building construction. Since these OEM sales comprise 80 per cent or more of the ballast market, fluctuation in total sales is to be expected. This fluctuation can be seen in Figure 1, which shows the total quantity and value of fluorescent lamp ballast shipments in the United States for the years 1956 through 1961 -- a time during which the economy suffered two recession periods, one in 1958 and one in 1960. (A table of the quantities and values of shipments by individual types of ballasts sold is given in Appendix A.)

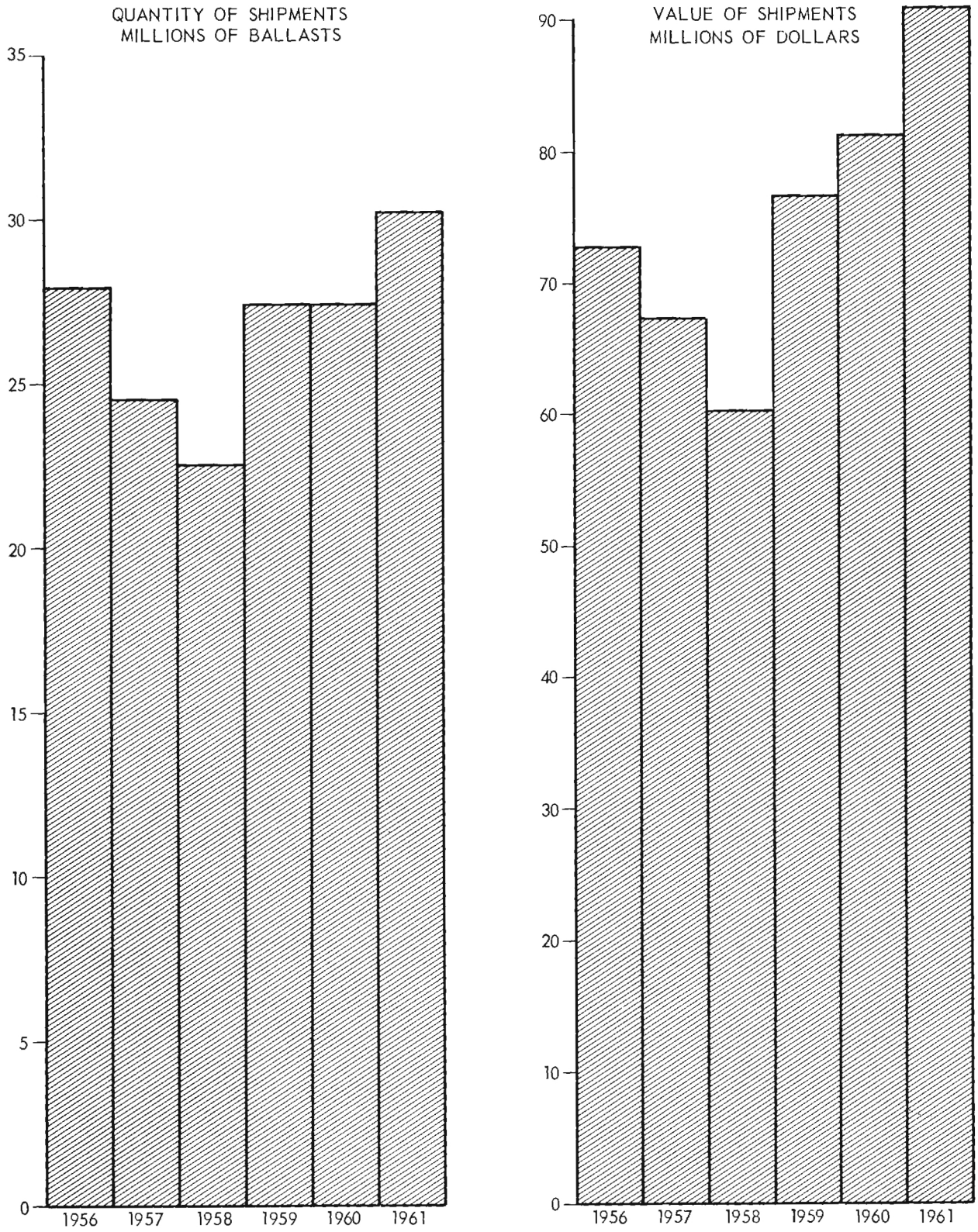
Ballast sales had a 90 per cent increase in dollar value from $48 million in 1954 to $91 million in 1961, while the number of ballasts sold has only increased from 20 to 30 million. During the same period the average unit value per ballast sold has increased from $2.30 to $3.00. Reference to the Appendix will reveal that this increase in unit value is due to a change in "product mix," that is, a gradual switchover to the more expensive type of ballast, rather than to an actual increase in the price of individual models. Sales of ballasts without built-in power factor correction have decreased from 49 per cent to 34 per cent of total ballasts sold in 5 years.

The Southeastern Market

The Atlanta area market for fluorescent lamp ballasts is currently $6 million per year. In addition, with Atlanta a major distribution center for the entire Southeast, a considerable number of ballasts flow through Atlanta warehouses to Florida and other points in the Southeast. Total annual demand in the six-state southeastern area[1/] is approximately $10 million.

1/ Alabama, Georgia, Florida, North Carolina, South Carolina, and Tennessee.

FIGURE I
FLUORESCENT LAMP BALLAST SHIPMENTS



SOURCE: "Current Industrial Reports", U. S. Department of Commerce.

The market in an area covering (in addition to the six states) Virginia, Mississippi, Louisiana, plus the southeastern half of Texas (see Map 1) is $15 million. These nine and one-half states approximate the area in which Atlanta enjoys a freight advantage over Danville, Illinois, where the nearest ballast manufacturer regularly supplying the OEM market is located.

The Atlanta area enjoys the advantage of being the site of the country's largest manufacturer of fluorescent fixtures in terms of number of units produced -- Lithonia Lighting, Incorporated, located in nearby Conyers, Georgia. Gibson Manufacturing Company of metropolitan Atlanta, producing a higher-priced line of fluorescent fixtures, is one of the better-known manufacturers in the Southeast. These two concerns produce only commercial and industrial type fluorescent equipment. Also in metropolitan Atlanta are two other companies which manufacture fluorescent equipment -- Ace Lighting Products Company and Stanley Electric Manufacturing Company.

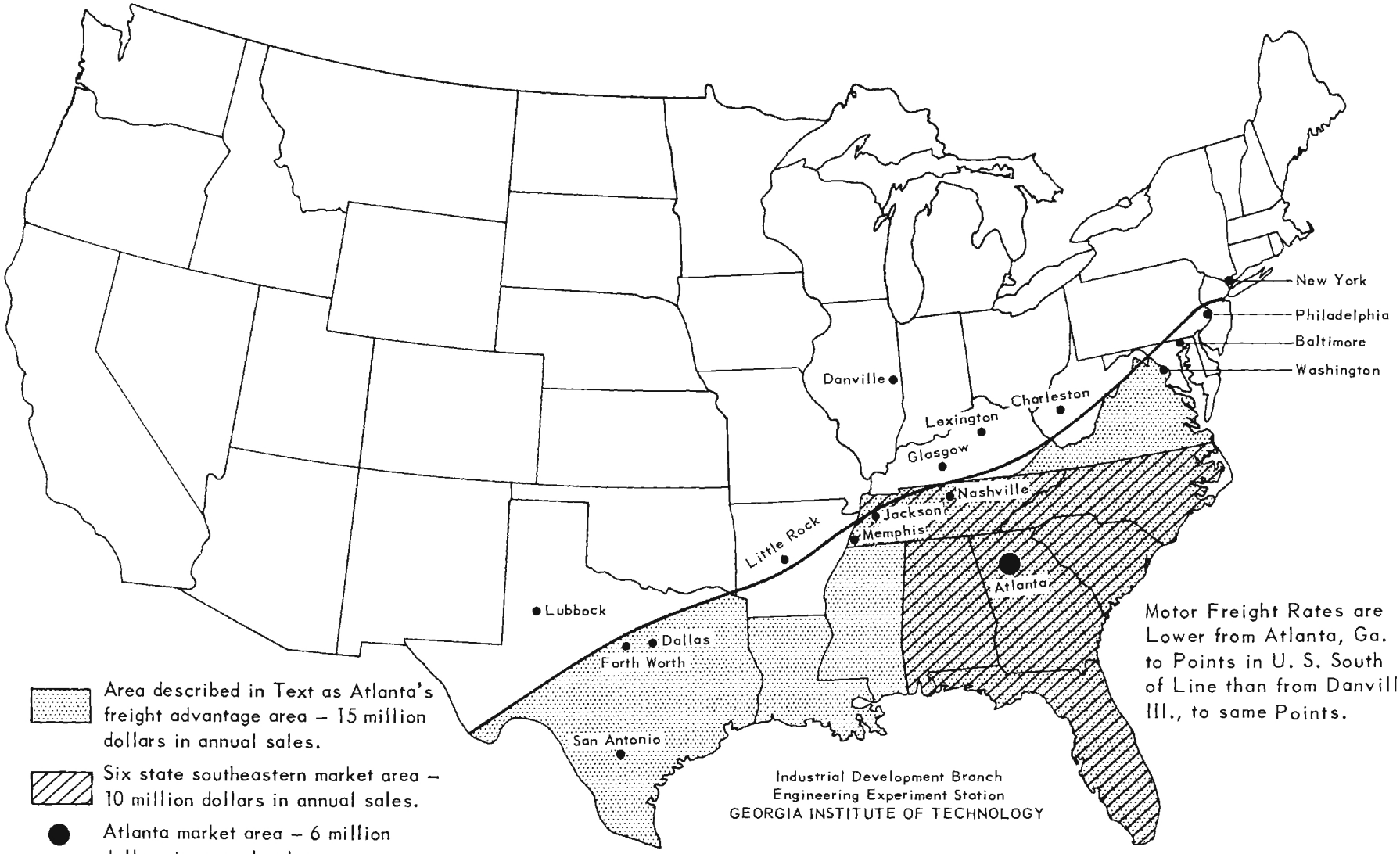
The largest manufacturer in the lighting industry today in terms of dollar sales volume, Day Brite Lighting, Incorporated, has a large plant (400 employees) in Tupelo, Mississippi. Day Brite's production, however, includes some incandescent equipment. Other major southeastern manufacturers of fluorescent fixtures are Light and Power Utilities Corporation with sizeable plants in Olive Branch, Mississippi and Memphis, Tennessee, and Sta-Brite Fluorescent Manufacturing Company and Triangle Electric Manufacturing Company, both of Miami, Florida. Westinghouse Electric Corporation, whose lighting division is at Vicksburg, Mississippi, has not been included as part of the estimated ballast market, as its requirements effectively constitute a market which is captive to its own ballast manufacture.

A partial list of southeastern fluorescent equipment manufacturers has been compiled from all known sources of information (see Appendix B). Map 2 shows their locations. The list does not include many small manufacturers who are primarily in incandescent production but have a limited fluorescent line, or who produce a smaller type residential fluorescent fixture or table lamp. The estimated market may, therefore, be understated by the amount of the requirements of such concerns.

The above market figures do not include requirements for mercury vapor lighting ballasts and other outdoor lighting transformers, or luminous tube

MAP 1

MAP SHOWING AREA WHERE FREIGHT COSTS ON FLUORESCENT LAMP BALLASTS WILL BE LESS FROM ATLANTA, GEORGIA THAN FROM DANVILLE, ILLINOIS



MAP 2
LOCATION OF MANUFACTURERS OF FLUORESCENT FIXTURES

sign transformers. These products are quite similar in make-up to fluorescent lamp ballasts and can, if desired, be manufactured in the same plant. The national market for these products is $20 million a year. An Atlanta ballast manufacturer who also produced such equipment should, therefore have an additional $2 million market potential in the Southeast.

Forecast

The manufacture of lighting equipment is one of the nation's dynamic industries, more than doubling its output every 10 years. Relighting -- the replacing of old, out-moded lighting equipment -- represents a large segment of the lighting market, but it is an outlet that requires cultivation. If relighting develops as anticipated, sales of lighting equipment are expected to continue to grow at the current rate of more than 7.2 per cent per annum through 1970.

Fluorescent lighting, not much more than 20 years old, is a fast growing industry. Fluorescent equipment is rapidly replacing incandescent for commercial, industrial, and institutional installation. For this reason, fluorescent lighting is considered the more dynamic of the two phases of this industry.

The lighting industry is characterized by constant change and improvement in engineering and design. But, whatever the future holds for the lighting industry, there will always be a need for some form of ballasting equipment as long as fluorescent lighting operates on the same principles it does today.

In view of the above, it is felt that a projected growth in ballast sales of 5 per cent per annum is most conservative. By 1965 sales in the Southeast will have increased by at least 21 1/2 per cent to more than $18 million a year.

III. LOCATION OF THE INDUSTRY

Ballast manufacture is concentrated in the Northeast and North Central U. S., with almost half of the plants lying in or near Chicago. While there are 15 concerns manufacturing some form of ballast equipment, the bulk of ballast production is attributable to six major manufacturers. Of these six, only five are regular suppliers to the OEM market. Westinghouse, the only one also in fluorescent fixture manufacture, sells very little of its ballast production to its competitors for the fixture market.

Map 3 shows the location of all 15 firms. (For a complete list of names, see Appendix C.) From this map it can be seen that none of the ballast manufacturers who regularly supply the OEM market is now located in the Southeast. One of the majors, however, Universal Manufacturing Corporation, of Paterson, New Jersey, is planning to build a branch plant at Mendenhall, Mississippi in the near future.

IV. ADVANTAGES OF AN ATLANTA SITE

Point of Greatest Demand

The Atlanta area market for ballasts amounts to $6 million, or 40 per cent of the total freight advantage area market of $15 million. In addition, Atlanta is the major distribution point in the Southeast and a large number of ballasts currently flow through Atlanta warehouses to other points in the Southeast.

Freight Savings

Total potential freight savings from a plant in Atlanta are given in Table 1 below. Savings have been calculated against alternative delivery from Danville, Illinois, and from Chicago. The nearest ballast manufacturer regularly supplying the OEM market is located at Danville, while three other major ballast manufacturers have plants in the Chicago area.

MAP 3
LOCATION OF MANUFACTURERS OF FLUORESCENT LAMP BALLASTS

Table 1

Freight Savings for an Atlanta Plant

Estimated Total Potential Freight Savings on Delivery	Delivery from Atlanta, Ga. instead of: Danville, Ill.	Chicago, Ill.
To the $6 million Atlanta Area Market	$ 95,000	$110,000
To the $10 million 6-State Market	$130,000	$150,000
To the $15 million Freight Advantage Area Market	$155,000	$190,000

Table 2 shows potential additional profits from freight savings both in dollars and in percentages. Two alternative premises are made:

1. that net profit before taxes is 10 per cent on sales, and
2. that net profit before taxes is 5 per cent on sales.

Table 2

Potential Additional Profit from Freight Savings
Atlanta over Danville, Illinois

Area Served	Additional Profit in Dollars	Per Cent Increase in Net Profit (Profit = 5% on Sales)	(Profit = 10% on Sales)
Atlanta Area Market	$ 95,000	32 per cent	16 per cent
Six-State Market	$130,000	25 per cent	12.5 per cent
Total Freight Advantage Area Market	$155,000	21 per cent	10.5 per cent

Therefore, it can be seen that on the basis of freight savings alone this plant could add between 10 and 32 per cent to its profit on sales in the South. If the alternatives were between Chicago and Atlanta the figures would be:

Table 3

Potential Additional Profit from Freight Savings
Atlanta over Chicago, Illinois

Area Served	Additional Profit in Dollars	Per Cent Increase in Net Profit	
		(Profit = 5% on Sales)	(Profit = 10% on Sales)
Atlanta Area Market	$110,000	37 per cent	18.5 per cent
Six-State Market	$150,000	30 per cent	15.0 per cent
Total Freight Advantage Area Market	$190,000	25 per cent	12.5 per cent

Since delivery freight is generally paid by the ballast manufacturer, it can be seen from the above figures that an Atlanta manufacturer supplying as little as 10 per cent of the southeastern market would enjoy considerable savings in delivery costs. As delivery to the ballast market is generally made by motor freight, all above figures are based upon comparison of motor freight rates.

A ballast is a heavy product for its value. The average value of all types of ballasts shipped in a year is estimated to be approximately $70 per 100 pounds. On this basis, total freight savings have been calculated from a comparison of rates to major points of demand in the southeastern market. A tabulation of some of the rates used in this study may be seen in Appendix D.

Atlanta's freight advantage extends over a large section of the nation. Map 4 delineates the area where motor freight rates favor an Atlanta plant as opposed to one at Danville, Illinois. Estimated southeastern demand has been based upon approximately this area (see Map 1 on page 5). Map 5 shows the slightly larger area where Atlanta has a freight advantage over Chicago. Specific advantages at named points are given in cents per hundredweight.

Improved Market Position

The first manufacturer establishing a plant in Atlanta should be able to capture most of the $6 million Atlanta area market, and considerably expand his sales throughout the rest of the Southeast. Proximity to the southeastern market would enable him to offer improved service to his customers. He would

be able to cut down delivery time and thus reduce customer inventory requirements. In locating near the largest fluorescent fixture manufacturer in the United States in terms of number of units produced, he would be able to keep in close touch with the requirements of a leader in the lighting industry. He would also be in a position to use his economic advantage to expand his operations by passing along some of his cost savings directly to the customer.

Labor Savings

Since there are no manufacturers of ballasts in this area, the calculation of possible labor savings is difficult. Nevertheless, considerable savings are to be expected. An executive of a major electric equipment manufacturer recently advised a Georgia Tech staff member that he was happy with the Georgia plant, not only because labor is cheaper than in his firm's northern plants (as was anticipated), but because labor is also more productive than in their northern plants -- a gain which was not anticipated. This superior productivity[1/] can give a company an important competitive advantage above the labor rate advantage. Several companies with both markets and raw materials in the North nevertheless have their production operations in Georgia. Their labor savings by far outweigh the freight disadvantages as well as the disadvantage of not being close to the customers. (The latter disadvantage has recently disappeared to some degree, since flying time to New York and Chicago is only about one and a half hours.)

Although there is no strictly comparable operation in Georgia to measure, the 1958 Census of Manufactures does give figures on transformers. These figures are not given for individual states in the South, however. The figures include the value of shipments, value added to the raw material, and wages. The data show that for each dollar of wages paid, shipments valued at the following amounts were made from the factories in different parts of the country:

South - - - - - - $7.70
Illinois - - - - $6.00

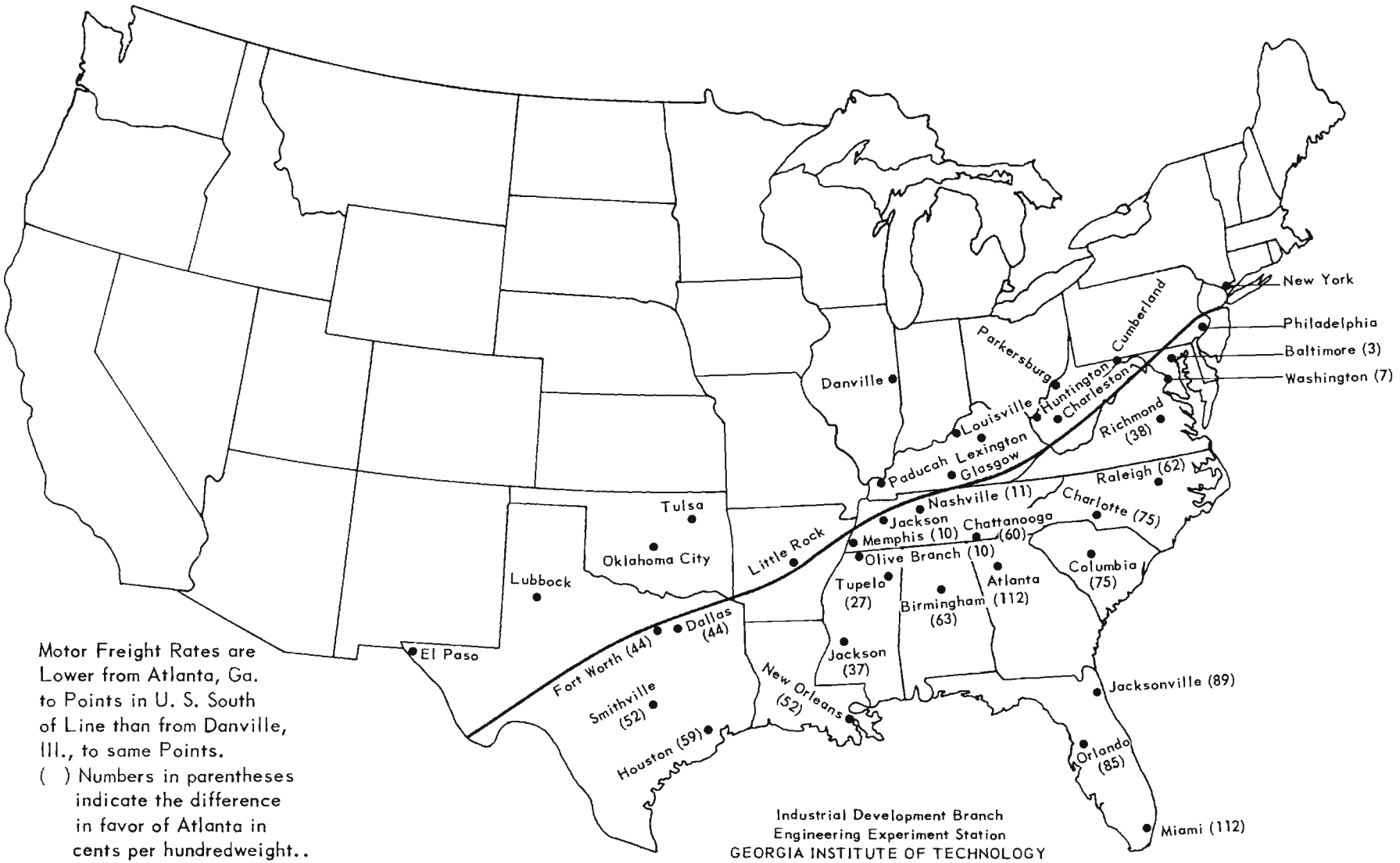
In other words, Illinois' wages are 17 per cent of sales and the South's only 13 per cent. The census also shows that for each dollar paid in wages the

---

1/ See Charles H. Sewell, A Formula for Labor Productivity in Georgia, July 1961.

MAP 4

MAP SHOWING COST DIFFERENCE WHERE FREIGHT COSTS ON FLUORESCENT LAMP BALLASTS WILL BE LESS FROM ATLANTA, GEORGIA THAN FROM DANVILLE, ILLINOIS



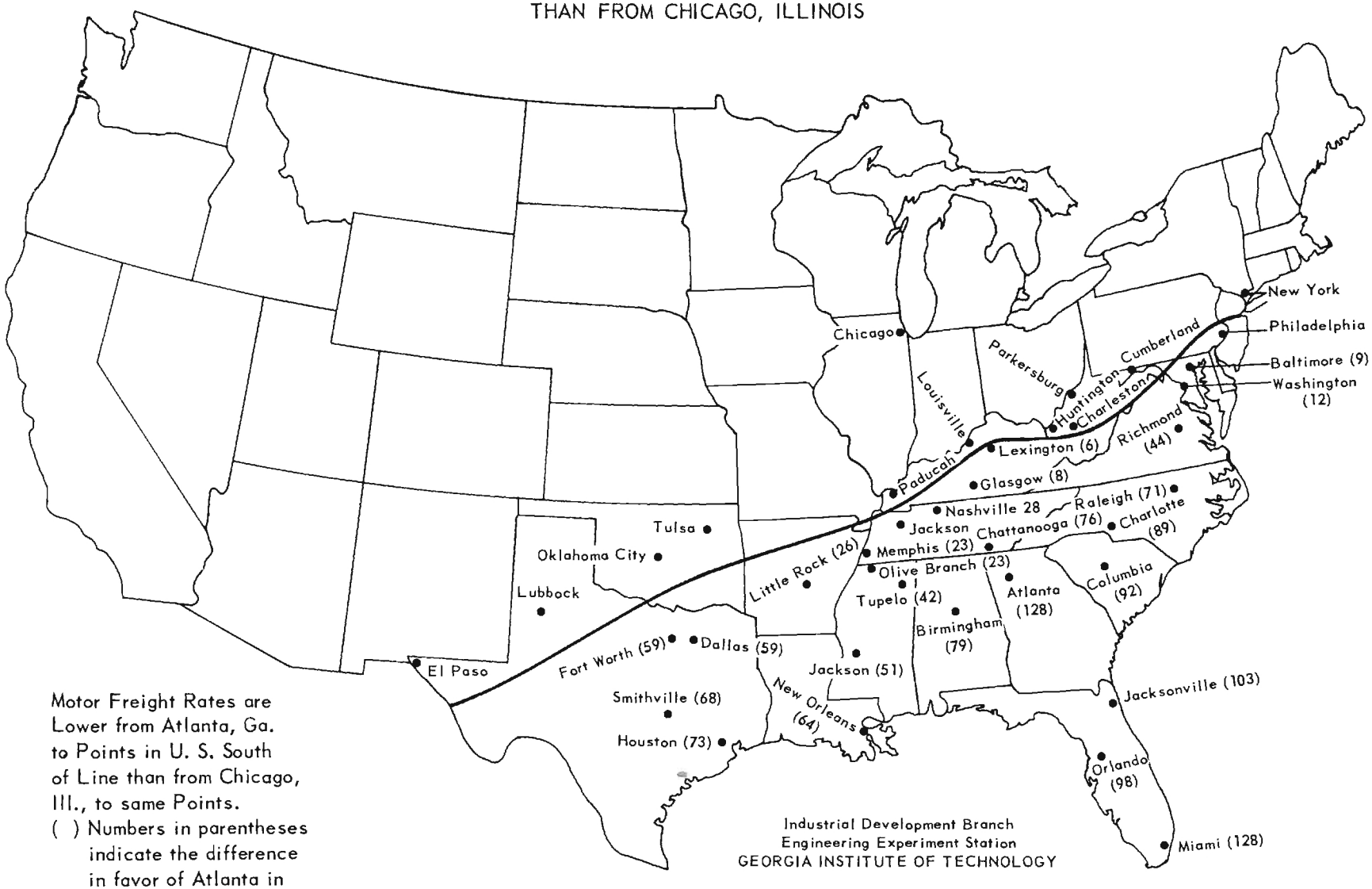
Motor Freight Rates are Lower from Atlanta, Ga. to Points in U. S. South of Line than from Danville, Ill., to same Points.

( ) Numbers in parentheses indicate the difference in favor of Atlanta in cents per hundredweight..

Industrial Development Branch
Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY

MAP 5

MAP SHOWING COST DIFFERENCE WHERE FREIGHT COSTS ON FLUORESCENT LAMP BALLASTS WILL BE LESS FROM ATLANTA, GEORGIA THAN FROM CHICAGO, ILLINOIS



Motor Freight Rates are Lower from Atlanta, Ga. to Points in U. S. South of Line than from Chicago, Ill., to same Points.

( ) Numbers in parentheses indicate the difference in favor of Atlanta in cents per hundredweight.

Industrial Development Branch
Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY

following amounts of value were added to the raw materials:

South - - - - - -	$4.30
Illinois - - - -	$2.90

Based on the above shipments per dollar of wages the figures below show what labor savings might be involved in annual sales of $6 million:

	Estimated Wages
Illinois - - - -	$1,000,000
South - - - - -	$780,000

This represents a wage difference of $220,000 or 3.7 per cent of sales. If profits before taxes are 10 per cent on sales, these savings would represent a 37 per cent increase.

Availability of Materials

Steel for ballast housings, shells and cores is available from nearby steel mills and warehouses. If, in setting up a branch plant, a manufacturer should not wish to establish a complete operation, he would find in the Atlanta area facilities capable of stamping, die-forming, and drawing his cores and housings on a contract basis. He could purchase his wire and cable from three Georgia wire manufacturers, one in a suburb of Atlanta. Most ballast capacitors are made by Federal Pacific Electric Corporation, whose plant is in Sanford, North Carolina.

APPENDIX A

FLUORESCENT LAMP BALLASTS
QUANTITY AND VALUE OF SHIPMENTS - TOTAL U. S.

	1956			1957		
	Quantity (thousands)	Value (thousand dollars)	Average Unit Price	Quantity (thousands)	Value (thousand dollars)	Average Unit Price
Switch start - 40 watt & under	11,976	7,525	0.63	8,996	5,001	0.56
All other incl. rapid start	1,794	3,264	1.82	1,939	3,479	1.79
Total Uncorrected power factor type	13,770	10,789	0.78	10,935	8,480	0.78
Slimline & instant start	5,347	29,520	5.52	5,119	27,300	5.33
Rapid start	4,851	18,938	3.90	5,805	23,075	3.98
Switch start	3,746	12,489	3.33	2,565	7,825	3.05
All other	177	920	5.20	83	620	7.47
Total Corrected power factor type	14,121	61,867	4.38	13,572	58,820	4.33
Grand Total	27,891	72,656	2.60	24,507	67,300	2.75

	1958			1959		
	Quantity (thousands)	Value (thousand dollars)	Average Unit Price	Quantity (thousands)	Value (thousand dollars)	Average Unit Price
Switch start - 40 watt & under	7,941	4,445	0.56	9,644	5,339	0.55
All other incl. rapid start	1,714	3,096	1.81	1,833	3,285	1.79
Total Uncorrected power factor type	9,655	7,541	0.78	11,477	8,624	0.75
Slimline & instant start	4,589	22,783	4.96	5,203	26,206	5.04
Rapid start	6,208	23,576	3.80	8,977	36,053	4.02
Switch start	1,988	5,919	2.98	1,636	5,134	3.14
All other	56	388	6.93	116	633	5.46
Total Corrected power factor type	12,841	52,666	4.10	15,932	68,026	4.27
Grand Total	22,496	60,207	2.68	27,409	76,650	2.80

	1960			1961 *		
	Quantity (thousands)	Value (thousand dollars)	Average Unit Price	Quantity (thousands)	Value (thousand dollars)	Average Unit Price
Switch start - 40 watt & under	8,714	4,867	0.56	8,078	4,435	0.55
All other incl. rapid start	1,872	3,348	1.79	2,089	3,653	1.75
Total Uncorrected power factor type	10,586	8,215	0.78	10,167	8,088	0.80
Slimline & instant start	5,492	26,525	4.83	6,311	27,860	4.41
Rapid start	9,799	41,630	4.25	12,358	50,533	4.09
Switch start	1,385	4,291	3.10	1,240	3,764	3.04
All other	133	745	5.60	116	604	5.21
Total Corrected power factor type	16,809	73,191	4.35	20,025	82,761	4.13
Grand Total	27,395	81,406	2.97	30,192	90,849	3.01

* Three quarters actual - - fourth quarter estimated.

SOURCE: U. S. Department of Commerce, Bureau of the Census, Current Industrial Reports.

APPENDIX B

FLUORESCENT LAMP BALLAST MANUFACTURERS

Acme Electric Corporation, Cuba, New York

Advance Transformer Company, Chicago, Illinois

Dafforn Transformer Company, Chicago, Illinois

The France Manufacturing Company, Cleveland, Ohio

General Electric Company, Ballast Department, Danville, Illinois

Industrial Electronics Corporation, Newark, New Jersey

Jefferson Electric Company, Bellwood, Illinois

Keystone Transformer Company, Philadelphia, Pennsylvania

Radionic Transformer Company, Chicago, Illinois

Robertson Transformer Company, Blue Island, Illinois

Sola Electric Company, Division of Basic Products Corporation, Elk Grove, Illinois

The Stratfield Company, Bridgeport, Connecticut

Universal Manufacturing Corporation, Paterson, New Jersey

Ward Leonard Electric Company, Mount Vernon, New York

Westinghouse Electric Corporation, Vicksburg, Mississippi

Note: The above list contains the names of some companies that make only one or two specialty ballasts (such as dimming ballasts) along with other types of transformers.

APPENDIX C

FLUORESCENT FIXTURE MANUFACTURERS

Ace Lighting Products Company, Atlanta, Georgia

Alson Manufacturing Company, Inc., Miami, Florida

Columbia Electric Co., Inc. (Div. of Columbia Electric & Mfg. Co.), Dallas, Texas

Day Brite Lighting, Incorporated, Tupelo, Mississippi

Electro Lighting Southern, Inc. (Affil. of Electro Lighting Corp.), Dallas, Texas

Fluorescent-Lite Equipment Company, Dallas, Texas

Gibson Manufacturing Company, Atlanta, Georgia

Halco Lighting Manufacturing Company, New Orleans, Louisiana

Harris Electric Manufacturing Company, Smithville, Texas

Jet Manufacturing Company, Inc., Houston, Texas

Light & Power Utilities Corporation, Memphis, Tennessee

Light & Power Utilities, Olive Branch, Mississippi

Lighting Dynamics Texas, Inc., Dallas, Texas

Lithonia Lighting, Inc., Conyers, Georgia

Onalite Corporation, Houston, Texas

Rutledge Manufacturing Company, Jacksonville, Florida

Southeast Lighting, Inc., Charlotte, North Carolina

Southern Lighting Manufacturing Company, Orlando, Florida

Special Products Company of Tennessee, Inc., Chattanooga, Tennessee

Sta-Brite Fluorescent Manufacturing Company, Miami, Florida

Stanley Electric Manufacturing Company, Atlanta, Georgia

Triangle Electric Manufacturing Company, Miami, Florida

U. S. Distributing Company, Miami, Florida

Wright Light, Inc., Houston, Texas

Note: The list does not include Westinghouse Electric Corporation, Lighting Division, Vicksburg, Mississippi, which is a captive market to its own ballast manufacture.

APPENDIX D

MOTOR FREIGHT RATES IN CENTS PER 100 POUNDS ON FLUORESCENT LAMP BALLASTS

To:	From Atlanta, Ga. Rate	Truckload Min. Wt. In Lbs.	From Danville, Ill. Rate	Truckload Min. Wt. In Lbs.	Savings in Cents per cwt. Atlanta vs. Danville	From Chicago, Ill. Rate	Truckload Min. Wt. In Lbs.	Savings in Cents per cwt. Atlanta vs. Chicago
Atlanta, Ga.	35*	22,000	145	22,000	110	161	22,000	126
Miami, Fla.	141	22,000	253	24,000	112	269	24,000	128
Orlando, Fla.	116	22,000	201	24,000	85	214	24,000	98
Jacksonville, Fla.	98	22,000	187	24,000	89	201	24,000	103
Birmingham, Ala.	72	22,000	135	22,000	63	151	22,000	79
Charlotte, N. C.	86	22,000	161	22,000	75	175	22,000	89
Raleigh, N. C.	108	22,000	170	22,000	62	179	22,000	71
Columbia, S. C.	83	22,000	164	22,000	81	175	22,000	92
Chattanooga, Tenn.	66	22,000	126	22,000	60	142	22,000	76
Nashville, Tenn.	92	22,000	103	22,000	11	120	22,000	28
Memphis, Tenn.	108	22,000	118	22,000	10	131	22,000	23
Tupelo, Miss.	95	22,000	122	22,000	27	137	22,000	42
Olive Branch, Miss.	108	22,000	118	22,000	10	131	22,000	23
Jackson, Miss.	108	22,000	145	22,000	37	159	22,000	51
New Orleans, La.	118	22,000	170	22,000	52	182	22,000	64
Dallas, Texas	184	22,000	228	20,000	44	243	20,000	59
Fort Worth, Texas	184	22,000	228	20,000	44	243	20,000	59
Houston, Texas	184	22,000	243	20,000	59	257	20,000	73
Smithville, Texas	196	22,000	248	20,000	52	264	20,000	68
Richmond, Va.	126	22,000	164	20,000	38	170	20,000	44

* Greater Atlanta area including Conyers